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Response to Office Action of April 1, 2003

The Examiner further notes that Afferton discloses the recognition of SD defects that are detected at a SONET/SDH network element and the generation of SONET Alarm Indication Signals ("AIS") responsive thereto in a SONET/SDH network. The Examiner then appears to take the position that knowledge of the ability to detect SF on an ATM network at the physical layer, and the knowledge of being able to detect both SD and SF at the SONET layer would lead a person of ordinary skill to modify an ATM network to detect SD by way of the physical layer protocol and generate ATM cells indicative of signal degrade on the ATM network, as claimed. Here, the Applicant respectfully disagrees.

Specifically, the detection of SF on the ATM network performed at the physical layer cannot be equated to the detection of SD at the physical layer. SF at the physical layer inevitably results in a SF at the higher ATM layer. As a result, SF in an ATM network may be easily detected at the physical layer: failure at the physical layer will invariably result in failure along the ATM circuit.

By contrast, the presence or absence of the SD at the physical layer is not conclusive of an SD at the ATM layer. Specifically, SD at the ATM layer is attributable to degrade along the entire ATM circuit. That is, SD along the ATM circuit may be attributable to the cumulative effect of signal degrade along individual links. Each link may not degrade the signal sufficiently in order to give rise to sufficient signal degrade to trigger an alarm. Cumulatively, however, signal degrade along the links may cause SD along the connection.

At the same time, the presence of SD at a single network element may not result in signal degrade along a particular ATM circuit. SD may, for example, affect portions of the SONET payload that are not subject to further signal degrade or that are not part of the ATM circuit. Moreover, error correction mechanisms along the ATM circuit may inhibit signal degrade at the sink of the circuit. For all of these reasons, the correlation between SD at the physical layer and SD on the ATM layer is not 100%.

Accordingly, as disclosed by Anderson, signal degrade at the ATM layer is typically detected using performance monitoring flows. These flows extend along an ATM circuit and as such take into account the cumulative effect of the traffic along the circuit.

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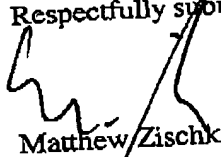
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In sharp contrast, the Applicant and only the Applicant, has recognized that the benefits associated with detecting signal degrade at the physical layer on an ATM network are worth the imperfections of such detection. As such, the Applicant suggests detecting SD at the SONET layer and assuming the correlation between this SD at the physical layer and SD at the ATM layer. Although imperfect, this form of detection may reduce network traffic as the need for performance monitoring flows is reduced. Additionally, as the possible SD is detected at a single location, it is detected more quickly than using conventional techniques.

Indeed, the recognition in the art of the ability to detect SD and SF conditions at the SONET layer, as recognized by Afferson, combined with the conscious choice to monitor signal degrade using performance monitor flows at the ATM layer disclosed by Anderson suggests that the invention as claimed in the presently independent claims is far from obvious. The teachings of Anderson, it is submitted, are contradictory to the invention as now claimed. Any suggestion that a person of ordinary skill would combine the teachings of Afferton and Anderson to arrive at the claimed invention, it is submitted is being made by the Examiner with the help of impermissible hindsight. Withdrawal of the rejection of independent Claims 1, 13, 19, 20, 21, and 22, and those claims dependent thereon is therefore respectfully requested.

In view of the foregoing, favourable reconsideration and allowance of the application are earnestly solicited.

Respectfully submitted,

  
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